

(No Model.)

C. R. PENFIELD.  
METALLIC BARREL.

No. 362,107.

Patented May 3, 1887.

Fig. 1.

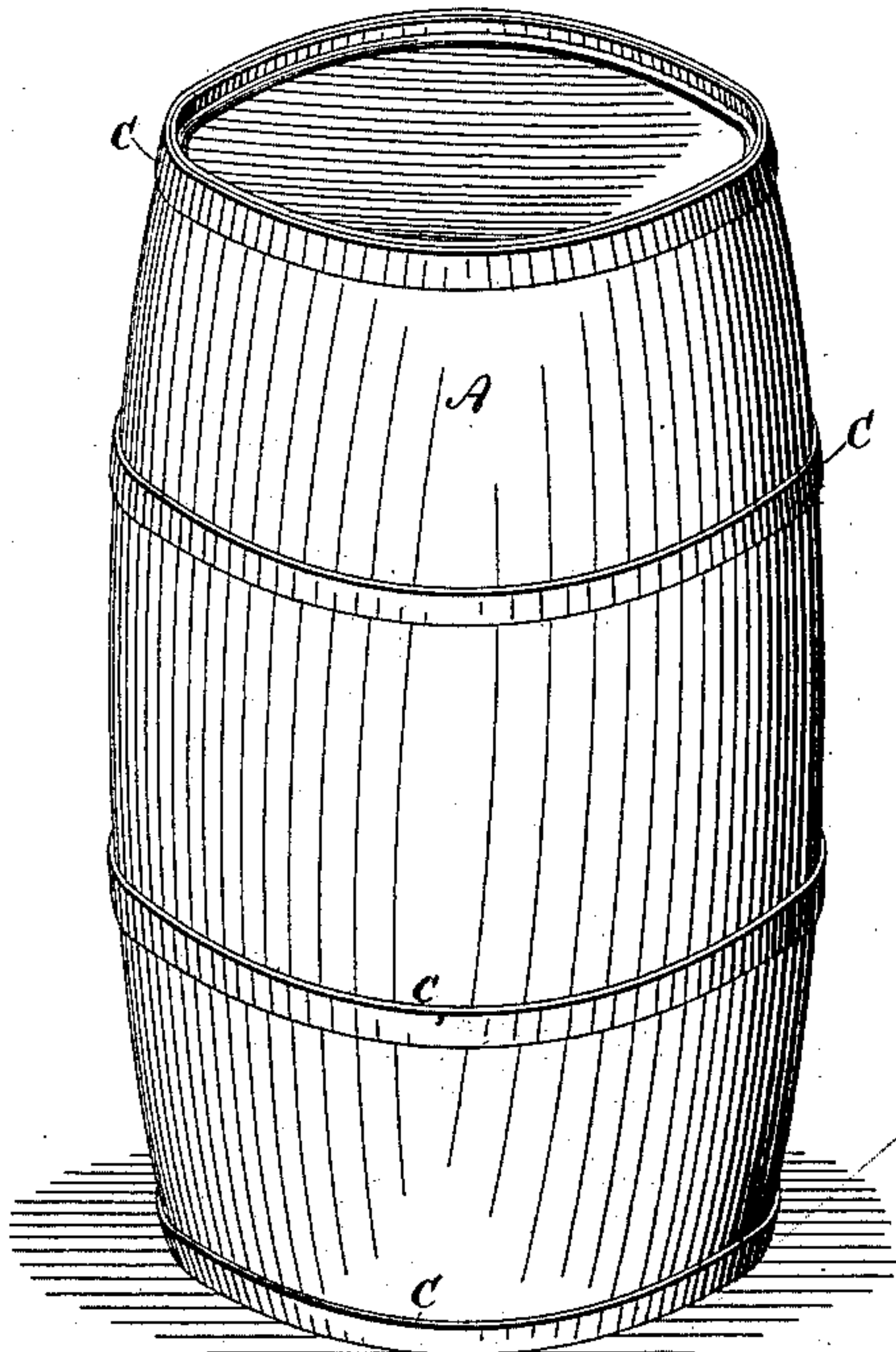


Fig. 2.

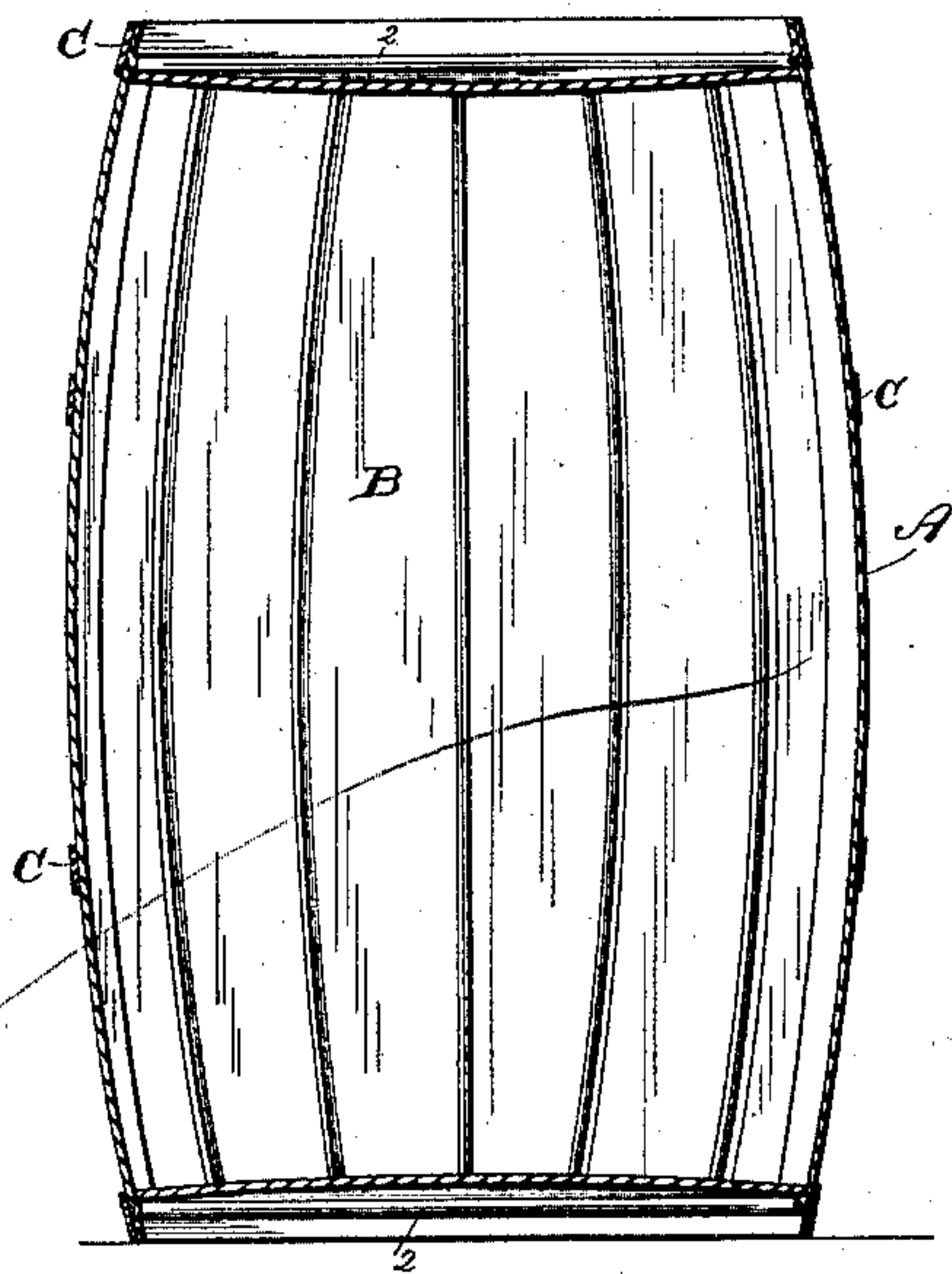


Fig. 4.

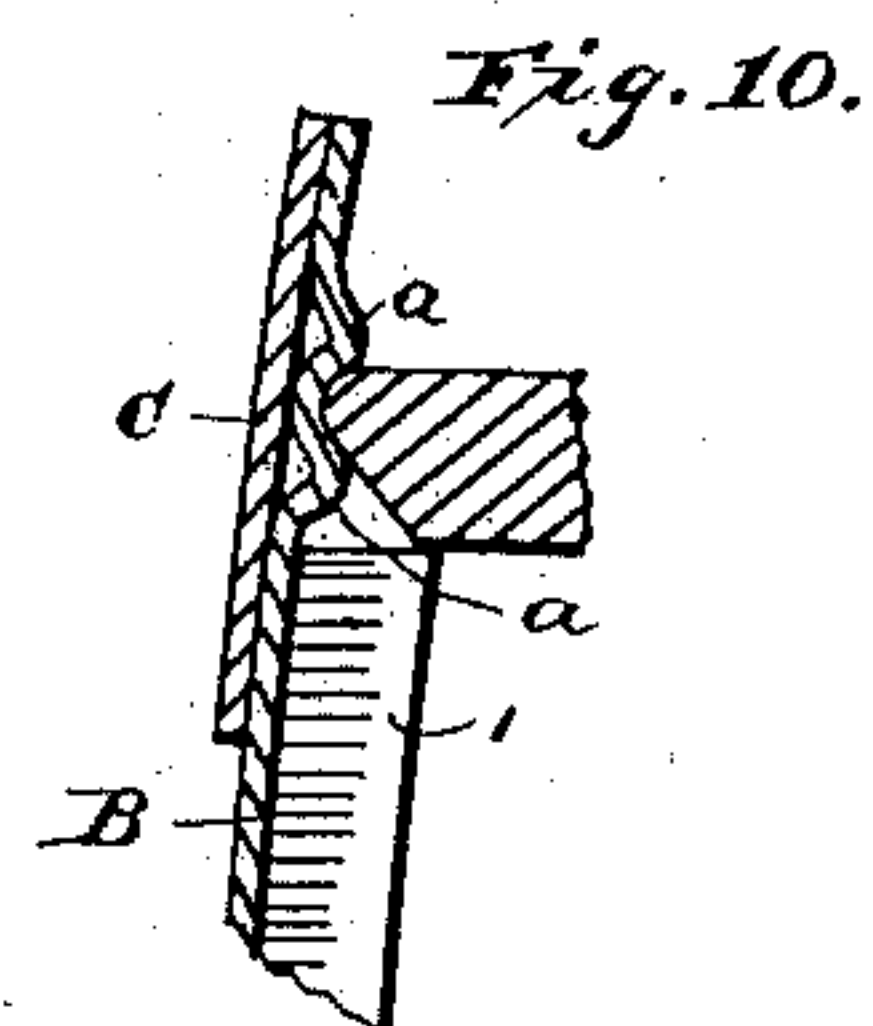
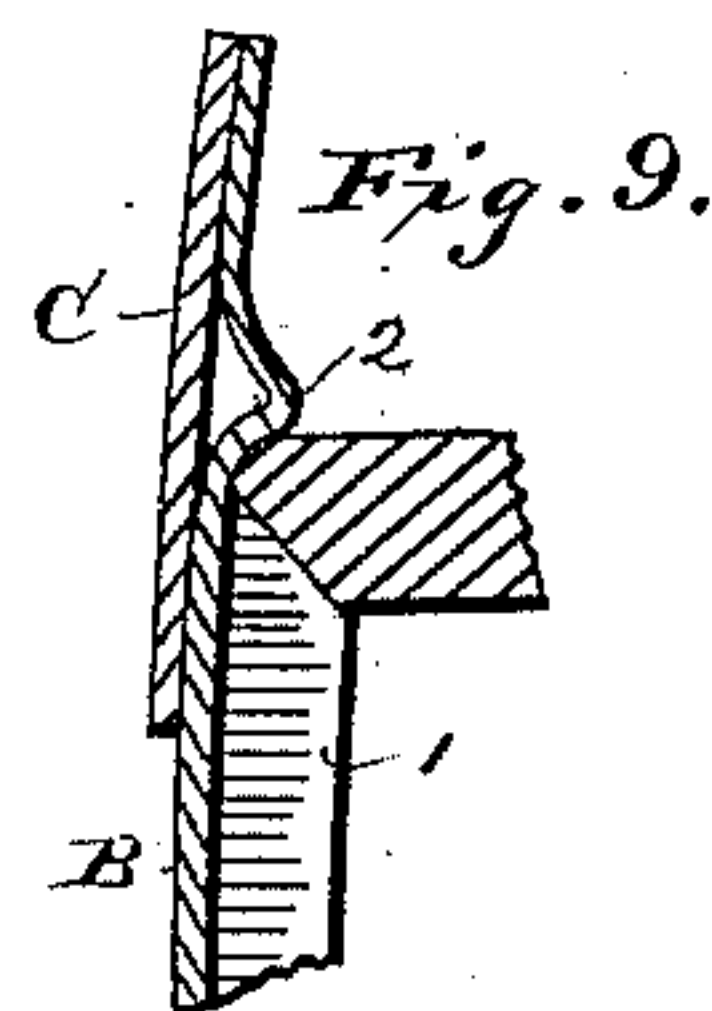
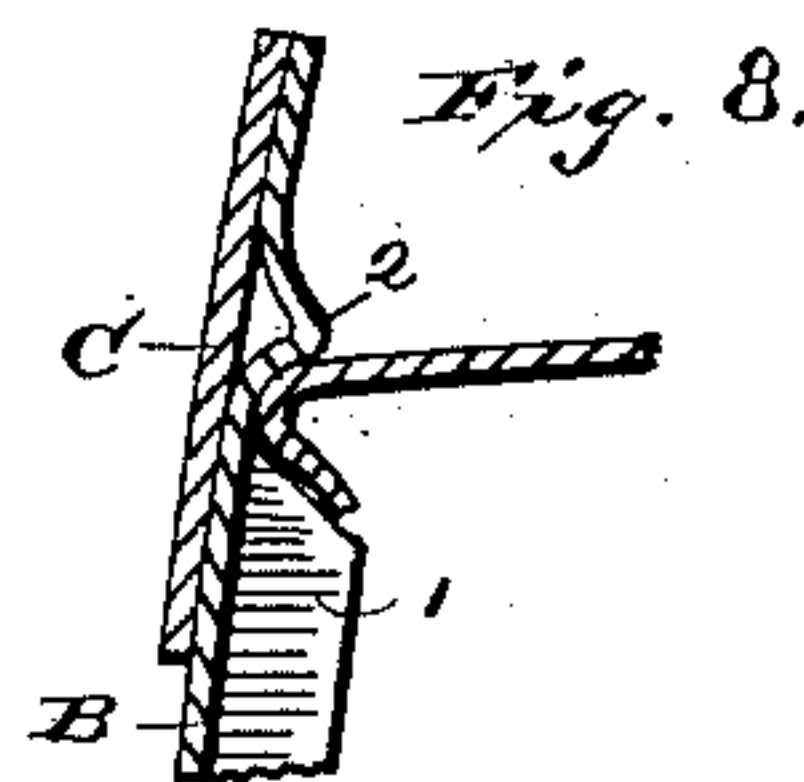
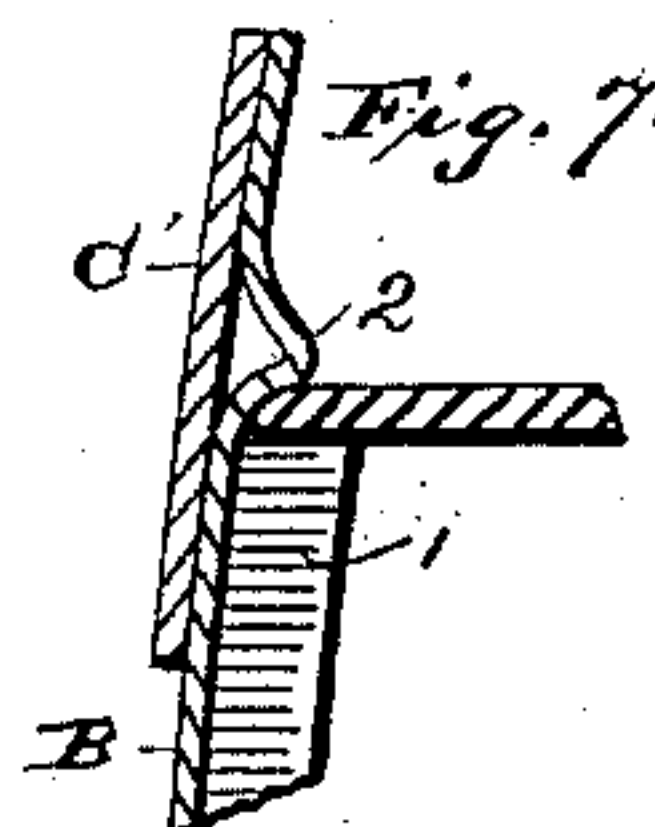
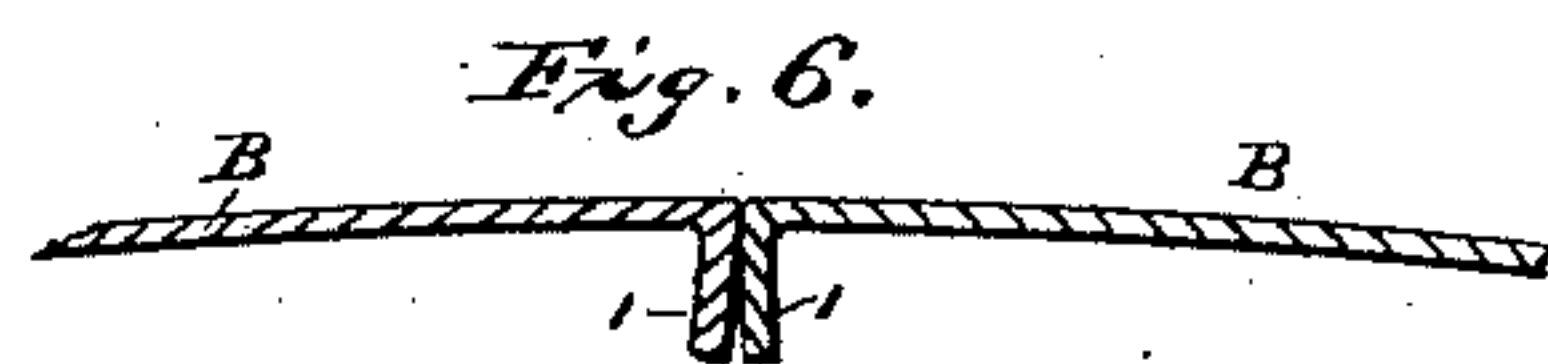
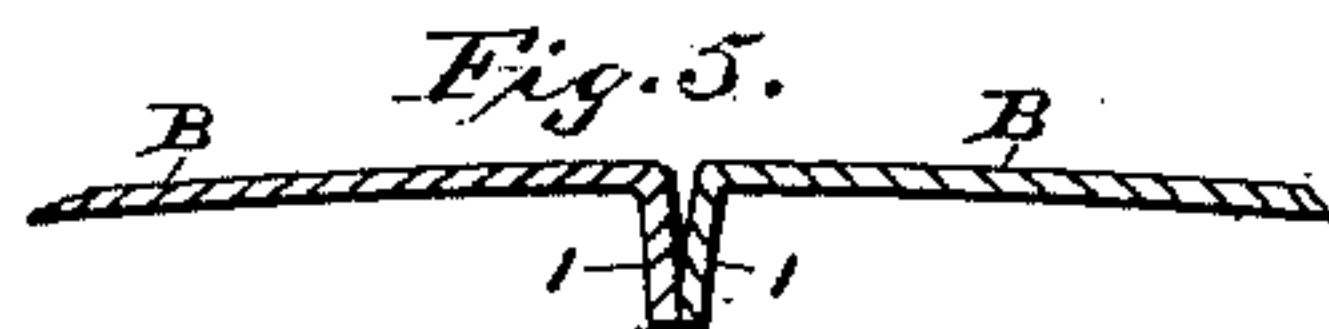
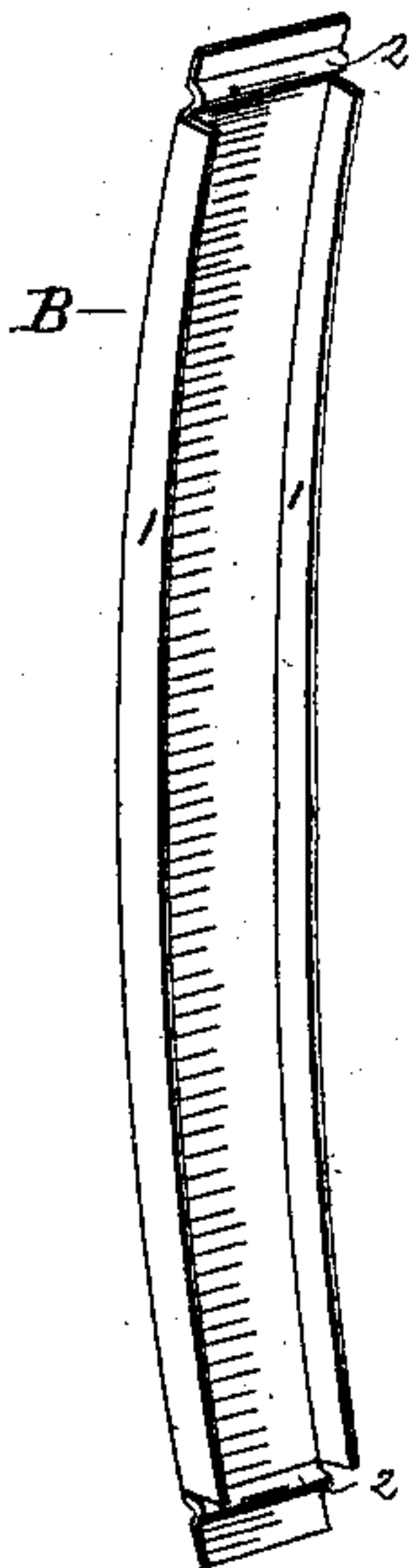


Fig. 13.



Fig. 3.

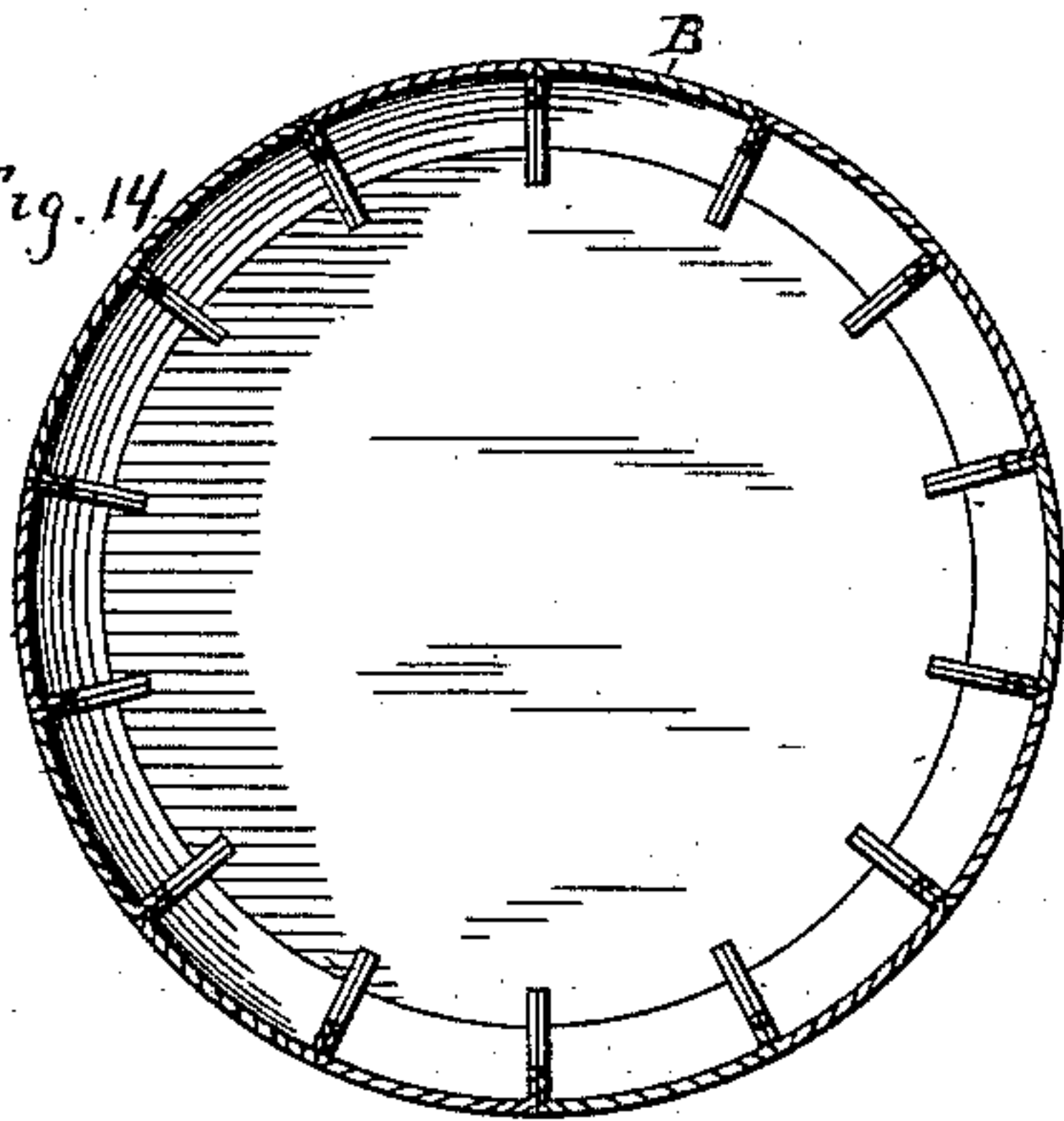


Fig. 14.



Fig. 11.

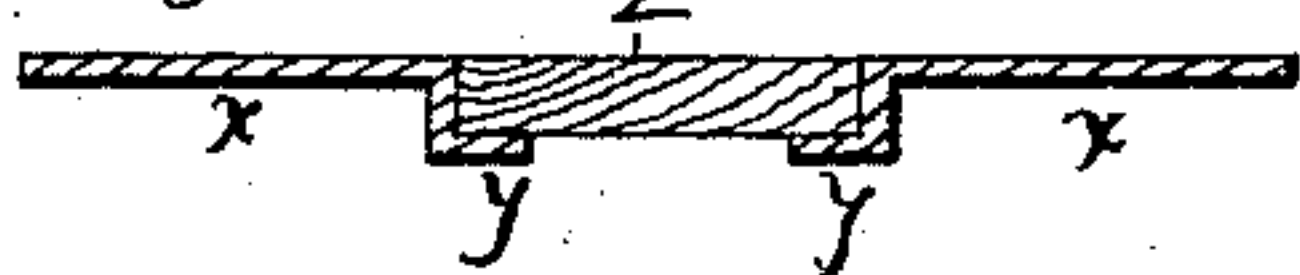
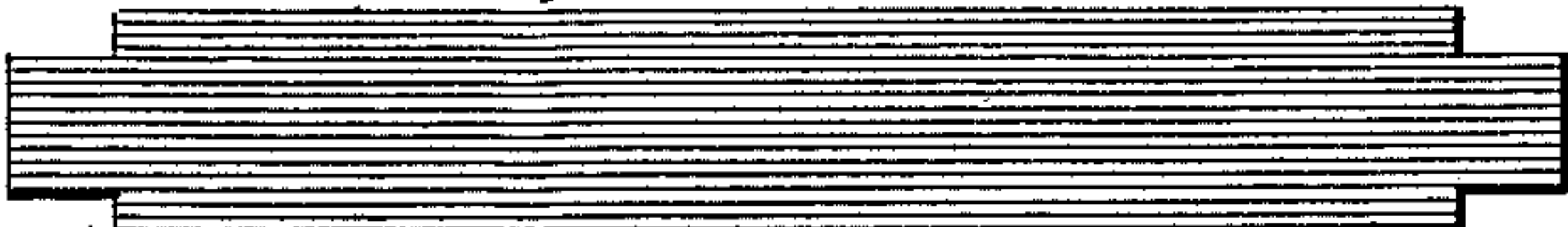


Fig. 12.



Witnesses.

Chas. R. Burr.  
Asst. Secy.

Inventor.

Charles R. Penfield  
by Church & Church  
his Attorneys.



# UNITED STATES PATENT OFFICE.

CHARLES R. PENFIELD, OF ROCHESTER, NEW YORK.

## METALLIC BARREL.

SPECIFICATION forming part of Letters Patent No. 362,107, dated May 3, 1887.

Application filed September 2, 1886. Serial No. 212,510. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES R. PENFIELD, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Metallic Barrels; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the figures and letters of reference marked thereon.

My invention has for its object to provide a packing and storing barrel constructed of metal that shall resemble in appearance the ordinary wooden barrel, but shall be much stronger, lighter, and altogether more desirable for use, whether used as a receptacle for liquids or as a dry or "slack" barrel; and it consists of a barrel constructed of metallic staves fashioned somewhat after the manner of wooden staves and fastened together, preferably, by hoops, or which may be soldered, or hooped and galvanized, if desired; and it further consists in certain novelties of construction and combinations of parts, which will be hereinafter fully described, and pointed out in the claims at the end of this specification.

In the drawings, Figure 1 is a view of a barrel constructed in accordance with my invention; Fig. 2, a longitudinal and Fig. 3 a cross section of the same. Fig. 4 is a perspective view of one of the staves; Figs. 5 and 6, views of the joints between the edges of the staves; Figs. 7, 8, 9, 10, and 11, views of modifications of the croze and means of fastening the heads therein, and Fig. 12 a view of the stave-blank. Figs. 13, 14, and 15 are views exhibiting various means of strengthening the chine.

Similar letters of reference in the several figures indicate the same parts.

A represents a barrel constructed in accordance with my invention, resembling, as far as outside appearance is concerned, an ordinary wooden barrel, constructed of the staves B, and fastened together by means of hoops C, as ordinarily.

The staves B are made from a blank of sheet metal, preferably steel, such as shown in Fig. 12, with the side flanges, 1 1, being forced by powerful pressure into the shape shown in Fig. 4—that is, they are bent transversely to give

the requisite amount of bilge, and then are given a slight longitudinal bending, so as to strengthen them sufficiently, and also to give the barrel which they are to form the proper rotundity. At the same or another operation the side flanges, 1 1, are bent up to nearly right angles with the body of the staves. Corrugations or ribs 2 2 are next formed near the ends of the blank, a short distance beyond the ends of the side flanges, and this space between the corrugations and the ends of the flanges forms the croze, as will be further on explained. These bending operations, though described *seriatim*, are, it will be understood, to be performed by one operation by some powerful pressing device—such, for instance, as a hydraulic press—suitable dies of course being employed to accomplish the purpose. The stave thus constructed, it will be seen, is very stout, and by reason of the several arches and projecting flanges is able to stand any amount of hard usage without losing its shape.

Now, in order to form a barrel from the above staves it is only necessary to set them up with the flanges 2 2 in contact with those of the next stave, and then to place the hoops on and drive them to their proper positions, after the manner of making ordinary wooden barrels.

As the flanges at the side of the staves have a broad bearing upon each other, they are effectually prevented from slipping by, and will therefore act in the same manner as ordinary wood staves. If desired, instead of having the flanges come close together, as shown, they may be bent slightly either inward or outward, as shown in Figs. 5 and 6—in the latter case to give elasticity to the barrel or to permit of applying some sealing material to the cracks thus formed, or in the former case to permit of sealing or galvanizing on the inside and permitting the galvanizing material to fill the crevice formed therein.

The manner of forming the croze and attaching the head may be varied in many ways, as may also the construction of the head. For instance, a plain metal head without flanges (such as shown in Fig. 7) might be employed, in this case the edge of the metal disk being confined between the corrugation and the ends of the flanges 1 1, the ordinary hoop being ap-



plied to the outside of the staves, pressing them inward and strengthening the chine, as shown; or, if desired, a concavo-convex head might be employed having a flange around it, as shown in Fig. 8, adapted to be confined in a manner similar to the device shown in Fig. 7, but having the projecting flange turned down.

In Fig. 9 I have shown the tops of the flanges on the staves inclined, forming the under side of the croze inclined and a wooden head applied thereto, and this device may be used in connection with a head composed partly of wood and partly of metal, *x x*, the two side pieces of metal being provided with flanges *y y*, projecting beneath the wooden piece *z*, as shown in Fig. 11, and they may be provided with upwardly or downwardly projecting flanges adapted to fit the croze.

In Fig. 10 I have shown a double corrugation or two ribs, *a a*, on the end of the stave, the groove between them constituting the croze, and this construction I regard as a particularly good one, because it relieves the ends of the longitudinal flanges 1 1 of all pressure upon them.

Barrels constructed as above may be used for liquids, in which event I propose to line them with some form of cement in order to make a tight joint between the staves, or to galvanize them, so as to render them non-corrosive, and also to fill the insides of the seams with the galvanizing material; or I also propose to use them for dry substances, in which case the barrel can be formed, in the usual manner, without the use of cement or galvanizing material, the hoops being relied upon to fasten the whole together, and when thus used one of the flanges 1 may, if desired, be dispensed with, a tight joint being made by one flange with the plain edge of the next stave.

The barrel as a whole is much stronger and lighter than the wooden barrels ordinarily in use, and is practically indestructible. The staves individually are much stronger by reason of the bracing and arching, and, furthermore, it can be used as a "knockdown" barrel when used for dry or semi-liquid materials, the spring in the metal flanges serving to preserve a practically-tight joint between the staves. There are no seams or corrugations on the outside of the barrel, and nothing to prevent its being rolled and manipulated after the manner of ordinary barrels.

The chine may be strengthened by a band of metal extending around the inside, if desired,

as shown in Fig. 13, or by employing an end hoop with an internally-projecting flange, as in Fig. 14, and the end of the staves may, if desired, be strengthened by forming a solid rib in lieu of the corrugation 1 1 for forming the croze, as in Fig. 15.

Various modifications will at once suggest themselves to those skilled in the art, and therefore I do not desire to be confined to the exact construction herein shown.

I claim as new—

1. The herein-described barrel, consisting of the metallic staves having the corrugations at their ends and the flanges at the sides, and the hoop or hoops for securing them together, substantially as described.

2. The herein-described barrel, consisting of the metallic staves curved so as to form the bilge, having the corrugations at their ends and the flanges at the sides, and the hoops for securing them together, substantially as described.

3. The herein-described barrel-stave, constructed of sheet metal bent transversely so as to form the bilge, and having the inwardly-turned flange at the side and the corrugations or ribs at the ends, substantially as described.

4. The herein-described barrel-stave, constructed of sheet metal bent transversely so as to form the bilge, and having the inwardly-turned flanges on both sides thereof, and the corrugations or ribs at the ends, substantially as described.

5. The herein-described barrel-stave, constructed of sheet metal bent transversely so as to form the bilge, having the flanges at the sides and the corrugations at the ends forming a portion of the croze, substantially as described.

6. The herein-described barrel-stave, constructed of sheet metal, having the flanges at the sides, terminating a short distance from the ends, and the corrugations at the ends, cooperating with the ends of the flanges to form the croze, substantially as described.

7. The herein-described barrel, constructed of sheet-metal staves, bilged as shown, having the flanges at the sides, the corrugations at the ends, forming with the ends of the flanges the croze, the sheet-metal heads, and the hoops for securing the whole together, substantially as described.

CHARLES R. PENFIELD.

Witnesses:

DE L. CRITTENDEN,  
W. D. ARMATAGE.